Michigan Biomass

House Energy & Technology Committee

June 2, 2009

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Who we are

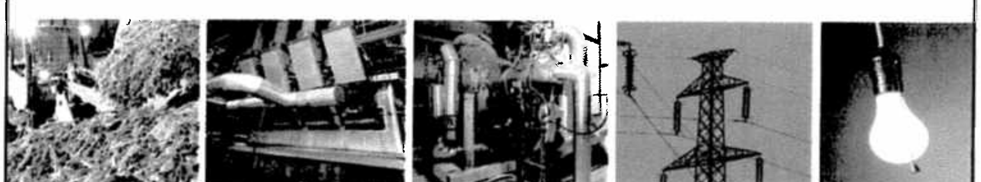
- *Existing wood-to-energy generators*
- *Independent power producers (IPPs)*
- *Since 1988*
- *Dynamic, diverse relationships*
  - Loggers
  - Mills & manufacturers
  - Packaging & construction
  - Host communities

Highlights

- *Promising biomass future*
- *Proven, reliable, affordable*
- *Economic dynamics*
- *Sustainable fuel infrastructure*
- *"Net negative" if new biomass replaces existing biomass*

Agenda

- *Background*
- *Michigan energy policy*
- *Fuel resources*
- *Potential biomass 'future'*
- *Resource concerns*



Background

- What we do
- How we do it
- Economic impact
- Existing facilities
- Renewable generation
- Power Purchase Agreements

Why biomass?

- *Domestic renewable*
- *Firm, reliable and on demand*
- *Fewer emissions than coal*
- *Solid waste management*

What we do

- *Renewable energy from waste wood*
- *Maximize value of the forest resource*
  - Full utilization, low value fiber
    - *Harvest residue*
    - *Mill waste wood*
    - *Manufacturing waste wood*
    - *Recycled wood*
  - 90% capacity factor

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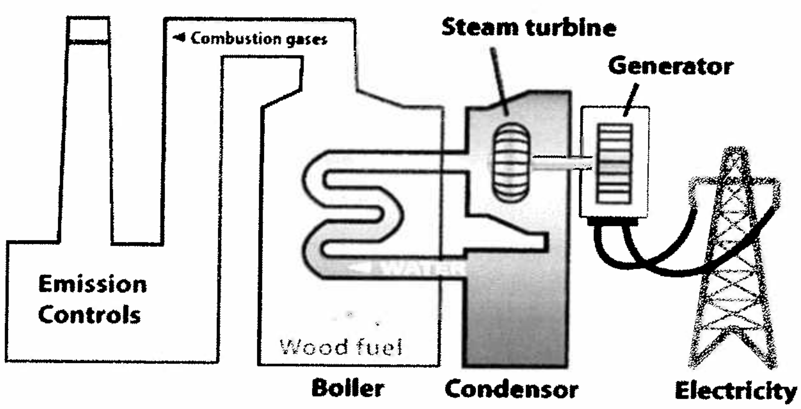
How we do it



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Economic impact

- *150 direct & 1,200 indirect jobs*
- *$56 million annual contribution*
  - Wood fuel purchases
  - Local expenditures
  - Payroll
  - Property taxes

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Existing facilities

1.	Hillman Power Co.	18 MW
2.	Lincoln Power Sta.	18 MW
3.	Grayling Generating Sta.	36 MW
4.	Cadillac Renewable Energy	36 MW
5.	McBain Power Sta.	18 MW
6.	Genesee Power Sta.	36 MW

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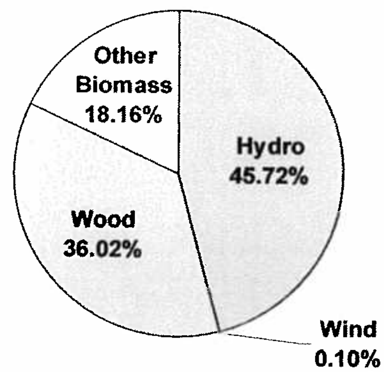
2007 generation

- *979,000 MWh*
  - 36.02% of renewables
    - *0.91% of grid power*
- *2 million tons of wood fuel*

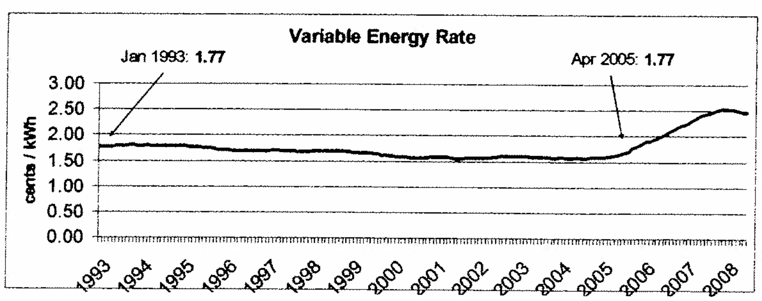


Michigan Renewables by Source

Source: http://www.eia.doe.gov/cneaf/electricity/epa/generation_state.xls

Power Purchase Agreements

- *PURPA (1978)*
  - Avoided cost of coal
  - No mechanism to recover fuel costs
  - Contracts silent on REC ownership



Michigan energy policy

- PA 295 of 2008
  - *The Clean, Renewable, Efficiency Energy Act*
- PA 286 of 2008
  - *Amends PA 3 of 1939*

Michigan energy policy

- *PA 295*
  - Threatens our ability to compete for fuel
  - Four of five RECs to utilities (PURPA)
    - *"New" facilities own their RECs*
    - *"New" facilities can "out spend" us on fuel*
  - PPA's limit passing on fuel costs

Michigan energy policy

- *PA 286 of 2008*
  - Some cost recovery

    ...recover the amount, if any, by which the merchant plant's reasonably and prudently incurred actual fuel and variable operation and maintenance <u>costs exceed the amount that the merchant plant is paid</u> under the contract for those costs. (Sec. 6a (8))

    - *Actual ...$18 million (2008 annualized)*
    - *Cap ...$12 million (7 eligible plants)*
    - *Shortfall ...$ 6 million ($5 / MWh)*

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Fuel resources

- Economics & vendor base
- Forest resource

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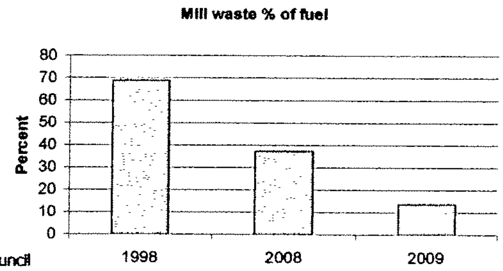
Economics & vendors

- *Single largest cost factor*
  - Waste wood economics
  - Reliant on logging, forest products industry
  - Shrinking forest products industry
    - *Mill closures: 14 since 1999* (15%)*



*Source: Michigan Forest Products Council

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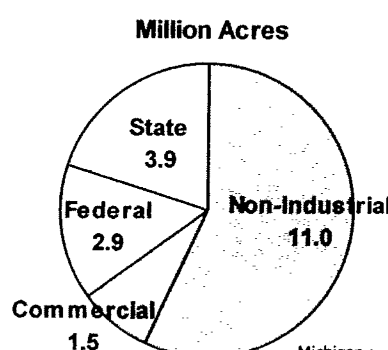
Forest resource

- *Michigan forests*
  - 19.3 million acres / 53% land mass
    - *65% private*
      - 57% non-industrial (ave. <27 acres)
      - 8% forest industry
    - *35% public*
      - 15% federal
      - 20% state



Source: Michigan Forest Products Council

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Forest resource

- *State timber sales*
  - No bid, high cost = small supply
- *Infrastructure*
  - Lacks stability, predictability
  - Small operations
  - Capital costs
  - Survival

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Potential future

- Basis data: 2007
- Michigan Climate Action Council
- Federal RES

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Basis data (2007)

- *2.4 million MWh total biomass*
  - 1.7 million MWh total <u>wood</u> power (62.4%)
    - *979,000 MWh IPP wood (41%)*

Source: http://www.eia.doe.gov/cneaf/electricity/epa/generation_state.xls

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MCAC report

- *22.6 million tons additional biomass# (electricity)*
- *Biomass = 10% by 2025*
  - 9.1 million tons*
    - *10.9 million MWh***
      - Incl. Co-firing 5-20% & off-grid
  - Wood only, max. potential (total resource)
    - *6.8 million additional tons#*
      - 5.6 million additional MWh

Source: Michigan Climate Action Council Report March 2009
Table J-1. Potential annual biomass resource availability, pg J-5,6 & 7
* Table J-1-2, pg. J-15
** Table J-1-1, pg. J-13

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MCAC report

TOTAL BIOMASS	EIA 2007 Grid	EIA 2007 w/off grid	MCAC Report
mmMWh	0.979	2.40	10.9
mmTons*	0.81	2.00	9.10

*Dry tons

Federal RES

- Biomass significant to federal RES
  - By 2020 ...222% to 250% from 2006*
  - By 2030 ...348% to 388% from 2006**

Source: Impacts of a 25-Percent Renewable Electricity Standard as Proposed in the American Clean Energy and Security Act Discussion Draft SR/OIAF/2009-04

* http://www.eia.doe.gov/oiaf/servicerpt/acesa/excel/waxrpsne.xls
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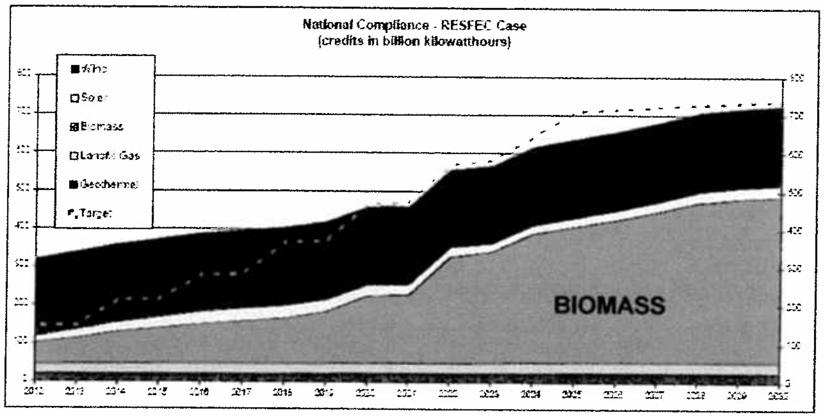
Federal RES



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Resource concerns

- Forest health
- Timber markets
- Landowner engagement
- Infrastructure stability

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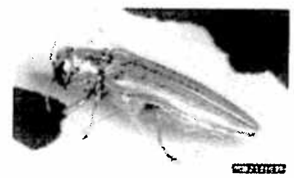
Forest health

- *Annual regeneration slowed**
  - 1999 ...3.0%
  - 2009 ...2.8%
  - Harvest ...1.0%
- *Disease & infestation*
  - Oak wilt, pine beetle, sirex wood wasp, emerald ash borer, beech bark disease



*Source: Michigan Forest Products Council

Timber market

- *State largest source of timber sales*
  - More support from DNR
    - *Need change in timber sales*
      - Stumpage prices high
      - Bidding, sales processes under review
    - *Improve management practices*
      - Availability, growth, mortality, sustainability

Landowner engagement

- *Private landowners*
  - *57% of forests, individual owners*
    - *10.8 million acres*
  - *Necessary to meet volumes*
    - Critical in adding 1 million acres

Infrastructure sustainability

- *Keep it viable 'til energy market matures*
  - Logger numbers down w/ market decline
    - *Timbermen membership down 20%*
  - Lost infrastructure costly
    - *Recapitalization of equipment*
    - *Dedicated equipment for energy wood*

Summary

- *Promising biomass future*
- *Proven, reliable, available, affordable, on demand*
- *Economics need attention*
  - Contract and legislative constraints
- *Sustainable fuel infrastructure*
  - Fuel resource management
  - Wood fiber markets
- *"Net negative" if new biomass replaces existing biomass*

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Summary

- *We are part of the solution*

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